

WASHINGTON DEPARTMENT OF ECOLOGY
ENVIRONMENTAL ASSESSMENT PROGRAM
FRESHWATER MONITORING UNIT
STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 20A070
STATION NAME: Sol Duc River
WATER YEAR: WY2010
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Introduction

Watershed Description

The Sol Duc River is approximately 78 miles long. The river flows west--northwest from the Olympic mountains near the town of Forks, Washington. Main tributaries to the Sol Duc include both the North and South forks as well as Bear Creek, Beaver Creek, and Lake Creek. The Sol Duc supports stocks of coho, chinook, and sockeye salmon as well as native runs of steelhead and cutthroat trout. The drainage encompasses parts of Olympic National Park and Olympic National Forest as well as private commercial timberlands in the lower elevations. The Sol Duc River joins with the Calawah and Bogachiel Rivers to form the Quillayute, a tributary to the Pacific Ocean near LaPush, Washington.

Gage Location

The stream gage is located on the right bank of the river on the upstream side of the Quillayute Road bridge at (approximately) river mile 13.8.

Table 1.

Drainage Area (square miles)	219
Latitude (degrees, minutes, seconds)	47 57 07 N
Longitude (degrees, minutes, seconds)	124 28 03 W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	1770
Median Annual Discharge (cfs)	1200
Maximum Daily Mean Discharge (cfs)	18100
Minimum Daily Mean Discharge (cfs)	146
Maximum Instantaneous Discharge (cfs)	20300
Minimum Instantaneous Discharge (cfs)	145
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	3940
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	216
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Discharge values for the Sol Duc River climbed relatively early from summer base flow in WY2010 with the onset of early autumn rains in mid to late October 2009. Rain events continued to raise discharge values in waves for the next month. The peak discharge for the Water Year occurred on November 16, 2009. A series of moderately high events continued through WY2010. After a long gradual decline in discharge during the summer months the minimum discharge value was recorded on August 31, 2010. Gentle rains in September 2010 elevated discharge to slightly higher values at the end of WY2010.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	1.3
Weighted Rating Error (% of discharge)	9.9
Total Potential Error (% of discharge)	11.2

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	3		
Period of Ratings	10/01-09/30		
Range of Ratings (cfs)	0.001-21,350		
No. of Defining Measurements	32		
Rating Error (%)	9.9		

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Narrative

The rating curve for the Sol Duc river gaging station is both stable and robust. The control structure for defining the curve is composed primarily of moderately large to large boulders.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	15.15
Maximum Recorded Stage (feet)	31.41
Range of Recorded Stage (feet)	16.26
Number of Un-Reported Days	0
Number of Days Qualified as Estimates	0
Number of Days Qualified as Unreliable Estimates	0

Narrative

The stage record for Water Year 2010 is continuous and complete. A 7--day (approximately) gap in the stage record was filled with fairly well correlated, regressed stage data from the Sekiu river gaging station (19J060).

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	
Range of Modeled Stage (feet)	
Range of Modeled Discharge (cfs)	
Valid Period for Model	
Model Confidence	

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
Station	10/05/2009

Activities Completed

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